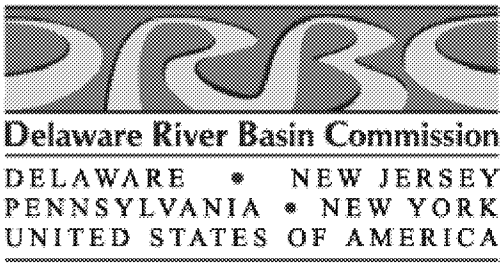
Delaware River Basin Commission



WATER POLLUTION CONTROL PROGRAM

Calendar Year 2019 Clean Water Act § 106 Grant

End of Year Progress Report

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Dana Hales, Joel Blanco	**Basin Commission Contact(s)**: T. Amidon	**PRC**: 202B06
Project Description: PCBs - Ongoing PMP Management			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Implementation of Stage 1 & 2 PCB TMDLs (Zones 2-6)		• Ongoing Point Source Data Review and Assessment. Ongoing Pollutant Minimization Plan review and management. Readily available data for action level option evaluation. • By November 30, 2019 DRBC will provide a list of PMPs reviewed by DRBC and by the states, plus a slide set on PMP activities during 2019.	DRBC supported the Pollutant Minimization Plan (PMP) initiative by coordinating activities of three States and EPA Regions II and III. Two coordinating conference calls were held in 2019, and four are scheduled for 2020. Procedures for PCB PMP reporting are being reviewed, and discussions about enhancements are underway with the co-regulating States. Commission staff has interacted with dozens of dischargers and their consultants via emails and conference calls to provide technical assistance in their PMP efforts. DRBC conducted a field visit to review City of Wilmington PCB trackdown progress, and also participated in a workshop in Dover, DE to discuss DNREC's WATAR program efforts to reduce PCBs. The Commission continues to review each State's permits for consistency in monitoring and reporting as provided in the PCB TMDLs.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson	**Basin Commission Contact(s)**: J. Yagecic	**PRC**: 202B06
Project Description: Boat Run monitoring program			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Assessment of Bacteria, eutrophication, metals, and conventional parameters (i.e., nutrients, dissolved oxygen, chlorides).		Management and execution of an expanded Boat Run monitoring program including continuation of year-round monitoring for nutrient and nutrient-related parameters. All data readily available in STORET/WQX. Monitoring composed of: • 22 sample locations in the Delaware River and Bay between River Miles 6.5 and 131; • Analysis of routine, bacterial, nutrient, algal, sodium and biotic ligand model parameter groups; • Monitoring is performed monthly for routine, nutrient, and algal parameters. Upon upload of all data to STORET/WQX, links to a pre-canned query for the resultant data set will be provided. All 2019 data uploaded by February 28, 2020 and pre-canned queries posted on DRBC web page by March 15, 2020.	Twelve boat run monitoring sampling events successfully completed in 2019. Analytical results for all sampling events have been submitted to DRBC. Data sets collected through October 2019 have been reviewed by DRBC and accepted. Data collected through August 2019 is available in WQX as of 2/3/2020. All remaining data will be reviewed and available in WQX by June 30, 2020.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson, Katie Bentley	**Basin Commission Contact(s)**: E. Panuccio	**PRC**: 202B06
Project Description: Expanded Nutrient Monitoring - Delaware at Trenton and Schuylkill at Philadelphia			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Implementation of nutrient criteria plan. Data in support of estuary eutrophication model.		Sampling and analysis of nutrients and nutrient related parameters twice per month at the Delaware River at Trenton and the Schuylkill at Philadelphia. All data readily available in STORET/WQX. Monitoring Composed of: • Sampling the Delaware River at Trenton NJ, Calhoun St. Bridge and the Schuylkill at Falls Bridge; • Analytical parameters include COD, Chloride, Ammonia, Nitrate + Nitrite, TKN, Orthophosphate, Alkalinity, Total Phosphorus, Silica, Total Residue (TS), Volatile Residue (TVS), Sulfate, TOC, and DOC; • Monitoring twice per month, year-round, for a total of 24 sampling events. Upon upload of all data to STORET/WQX, links to a pre-canned query for the resultant data set will be provided. All 2019 data uploaded by February 28, 2020 and pre-canned queries posted on DRBC web page by March 15, 2020.	On track with twice monthly monitoring schedule. Completed 12 out of 24 events as of early July with 2 sampling events scheduled for mid- and late- July. Per Eutrophication Model Expert Panel recommendations, DRBC added SKN to the analytical parameter list in March 2019. Received data from NJDOH up to 5/7/2019. Added Ultimate BOD (90-day test) twice monthly for 6 months starting at the end of May. On track with monitoring with first test still in progress. Project and Monitoring Location file updated and sent to Program Manager of Data Administration on 6/5/2019 (updated file uploaded as of 6/13/2019). Completed 23 out of 24 monitoring events. Last event was cancelled due to expected snowy conditions. Received through early September nutrient data from NJDOH laboratory. Data from

			January through early September is uploaded to WQX, with second event in September through early December results not yet received or uploaded. Ultimate BOD monitoring occurred twice per month at these locations through November. Data for these results have been received up to September (1/7/2020). Because the test requires 90 days, it is expected to receive the results near the end of the first quarter of 2020.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson, Katie Bentley	**Basin Commission Contact(s)**: E. Panuccio	**PRC**: 202B06
Project Description: Nutrients - Nutrient Monitoring in Tidal Tributaries to the Delaware Estuary			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Implementation of nutrient criteria plan. Data in support of estuary eutrophication model.		Continued nutrient monitoring at selected tributaries to the Delaware Estuary. Monitoring Composed of: • Selected tributaries to the Delaware Estuary pending assessment of 2017 and 2018 data; • Analytical parameters include COD, Chloride, Ammonia, Nitrate + Nitrite, TKN, Orthophosphate, Alkalinity, Total Phosphorus, Silica, Total Residue, Total Volatile Residue, Sulfate, TOC, DOC; • Eight monitoring events in 2019. Upon upload of all data to STORET/WQX, links to a pre-canned query for the resultant data set will be provided. All 2019 data uploaded by February 28, 2020 and pre-canned queries posted on DRBC web page by March 15, 2020.	On track with monthly monitoring for an eight-month period. Starting in March, 4 monitoring events at 25 locations have been completed as of early July. The 5th event is scheduled for mid-July. Per Eutrophication Model Expert Panel recommendations, DRBC added SKN to the analytical parameter list at the start of monitoring in 2019. Added Ultimate BOD (90-day test) monthly for 6 months starting at the end of May for 3 tributaries (Neshaminy, Rancocas, and Brandywine Creeks). Received data from NJDOH for March and April sampling events. Project and Monitoring Location file updated and sent to Program Manager of Data Administration on 6/5/2019 (updated file uploaded as of 6/13/2019). Received through August 2019 data (waiting on results from two monitoring events in September). Moved October monitoring to end of September to capture low-flow conditions, which were lacking in 2018 and most of 2019. Received up to early September Ultimate BOD data. The last monitoring event occurred in late October for the Ultimate BOD monitoring of tributaries. Nutrient data from March through August is

			uploaded to WQX, with September results to be added (1/7/2020).

Goal 2: Protecting America's Waters			
Objective 2: Objective 2.2: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson, Katie Bentley	**Basin Commission Contact(s)**: E. Panuccio	**PRC**: 202B06
Project Description: High Flow Tributary Monitoring **(Monitoring Initiative)**			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Implementation of nutrient criteria plan. Data in support of estuary eutrophication model.		Nutrient monitoring at selected tributaries to the Delaware Estuary, specifically targeting high flow events. Monitoring Composed of: • Selected tributaries to the Delaware Estuary pending assessment of 2017 and 2018 data; • Analytical parameters include COD, Chloride, Ammonia, Nitrate + Nitrite, TKN, Orthophosphate, Alkalinity, Total Phosphorus, Silica, Total Residue, Total Volatile Residue, Sulfate, TOC, DOC; • three monitoring events in 2019. Upon upload of all data to STORET/WQX, links to a pre-canned query for the resultant data set will be provided. All 2019 data uploaded by February 28, 2020 and pre-canned queries posted on DRBC web page by March 15, 2020.	High-flow events have been sampled more in our Tributary Nutrient Monitoring program relative to low-flow or baseline conditions. As the year progresses, and after reviewing 2018 flow data, DRBC's monitoring team agree that low-flow conditions should be a priority rather than high-flow conditions. The Tributary Nutrient Monitoring schedule will be adjusted to capture dry weather samples as opportunities arise. High-flow events comprised a large portion of the monitoring events, thus low-flow monitoring was targeted when possible. October monitoring in 2019 was moved to late September to capture the low-flow conditions (1/7/2020).

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Katie Bentley, K.L. Lai	**Basin Commission Contact(s)**: N. Suk	**PRC**: 202B06
Project Description: Estuary Eutrophication Model Development			

Environmental Outcomes	**Measures**	**Outputs for FY 2019 (Commitments)**	**Status/Comment**
A model for determining Delaware Estuary dissolved oxygen response to nutrient loadings.		• Continued development of the Delaware Estuary Eutrophication model. • In November 2019, DRBC will provide to EPA slides documenting the progress and status of model development. • Targeted to develop initial eutrophication water quality model by December 31, 2019. • Continued calibration and exercise of models.	• Modeling QAPP has developed, submitted and approved by EPA. • Model code enhancement has been completed to be able o to create a linkage file for WASP8 utilizing COSMIC scheme and, o to maintain the cell volume once a cell becomes dry. This modification enhances flow continuity. • Developed pre-processor to calculate necessary state variables from monitored data. • Time series nutrients loadings from tributaries and point sources for year 2018 have been developed. • Three dimensional EFDC hydrodynamic and WASP8 water quality models are under development. o Multiple model grids have been created and diagnostic analyses were performed. o Eutrophication model for 2018 was developed using Grid version 6.3: due to the extended overall simulation time requirements, Grid version 7 is under development.

			• Held two model expert panel meeting in March 2019 and December 2019 followed by a meeting with Water Quality Advisory Committee. The summary from the each meeting can be found at: ○ https://www.nj.gov/drbc/library/documents/WQAC/032019/ExpertPanel_WQACreport.pdf ○ https://www.nj.gov/drbc/library/documents/WQAC/120519/update_expert-panel_model-progress.pdf

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson, Katie Bentley, KL Lai	**Basin Commission Contact(s)**: J. Yagecic	**PRC**: 202B06
Project Description: Spectral Analyzers for Nitrate			

Environmental Outcomes	**Measures**	**Outputs for FY 2019 (Commitments)**	**Status/Comment**
Continuous real-time Nitrate measurements at key locations relevant to the Delaware Etuary Eutrophication Model.		Continuation of DRBC's cooperative agreement with USGS for the temporary deployment of spectral analyzers at the Delaware River at Trenton (model boundary) and Chester (model interior). Trenton spectral analyzer is reporting nitrate. Chester spectral analyzer is reporting nitrate and dissolved organic carbon. Analyzers were deployed in 2018 and will remain through calendar year 2019 (and beyond). USGS will collect grab samples necessary for translating the spectral signal to nitrate concentration and (at Chester) organic carbon concentration. Real-time data is currently available at https://waterdata.usgs.gov/usa/nwis/uv?01463500 and https://waterdata.usgs.gov/nwis/uv?site_no=01477050. The spectral signal will be back-translated so that the continuous data time series will be available for the full period of deployment. Data will be readily available via USGS NWIS database.	Both nitrate spectral analyzers are in place and reporting data. Data from the Delaware River at Trenton is available at https://waterdata.usgs.gov/usa/nwis/uv?01463500 Data from the Delaware River at Chester is available at https://waterdata.usgs.gov/nwis/uv?site_no=01477050 Nitrate spectral analyzer data collected at the Delaware River at Trenton will allow us to accurately load nitrate into the model. Nitrate spectral analyzer data collected at the Delaware River at Chester will allow us to tune to model to ensure that the model is accurately simulating nitrate concentrations within the model domain, at a location showing the among the highest variability in nitrate concentrations.

Goal 2: Protecting America's Waters			
Objective 2: Objective 2.2: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: Bill Richardson, Katie Bentley, KL Lai	**Basin Commission Contact(s)**: J. Bransky	**PRC**: 202B06
Project Description: Upper Estuary Primary Productivity Measurements			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Measurements of Primary Productivity and respiration in the Upper Delaware Estuary, in support of the Delaware Estuary Eutrophication Model.		DRBC will collect surface and bottom samples in the upper portion of the Delaware Estuary (Zones 2, 3, 4, and the upper portion of Zone 5) for the incubation and measurements of primary productivity and respiration. Incubation and measurement will be performed by the University of Maryland, Horn Point Laboratory. This is a continuation of work performed in 2018. Sampling will follow the same transects and sites performed in 2018. UM Horn Point Lab will prepare a report. The final report will be published on the DRBC web site by July 1, 2020.	Field sampling was successfully completed in May and July 2019. Awaiting results from lab. Final report expected Match to July 2020.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: Katie Bentley, KL Lai	**Basin Commission Contact(s)**: J. Bransky	**PRC**: 202B06
Project Description: Delaware Estuary enhanced light extinction data			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Data in support of estuary eutrophication model.		DRBC will collect measurements of PAR in air, PAR at 1-meter water depth, TSS, and chlorophyll-a during 3 sampling events at approximately 60 stations per event (for a total of 180 samples) the upper portion of the Delaware Estuary. This effort is a continuation of light extinction monitoring begun in 2018. This data will be used to develop a candidate regression model for determining light extinction as a function of estuary eutrophication model state variables. TSS and chlorophyll-a data will be readily available in STORET/WQX by December 31, 2019. PAR data will be available via the DRBC web site by December 31, 2019. Candidate light extinction model will be refined in coordination with the Expert Panel.	Light extinction samples are scheduled to be collected over three events in July, August, and September 2019. Color and DOC parameters will be added to the sampling. July sampling event successfully completed. August and September sampling events were successfully completed as well. All data has been received from the lab for these projects. Data will be uploaded to STORET by 1/31/2020.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: II. DRBC Criteria-Based Programs **Work years**: 2019:	**EPA Contact(s)**: Dana Hales, Joel Blanco	**Basin Commission Contact(s)**: N. Suk	**PRC**: 202B06
Project Description: Stage 2 PCB TMDLs			
Environmental Outcomes	**Measures**	**Outputs for FY 2019 (Commitments)**	**Status/Comment**
Finalization of Stage 2 PCB TMDLs		Following tasks are identified under the assumption that the draft Stage 2 PCB TMDLs for the Delaware River Estuary and Bay is published for comments in 2018 and hold multiple public meetings in 2019. Support EPA in preparation of responses to comments document. Finalize Stage 2 PCB TMDLs report based on comments from stake holders and general public.	• Completed multiple revisions to the Draft Stage 2 PCB TMDLs Report based on reviews and comments from EPA R2 & R3 legal staffs. • Draft Stage 2 PCB TMDLs Report has been submitted to EPA Region 2 and 3 on July 30, 2019. • Follow-up supports by DRBC staff are on-hold pending EPA's actions, i.e., public meetings/public hearings.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: Katie Bentley, KL Lai	**Basin Commission Contact(s)**: J. Bransky, T. Amidon	**PRC**: 202B06
Project Description: Phytoplankton Identification and Enumeration in Delaware Estuary			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Data in support of estuary eutrophication model.		Phytoplankton identification and enumeration in the Delaware River will be useful for the development of the Eutrophication Model. In 2019, phytoplankton collections will occur at a subset of Boat Run sites. Phytoplankton will be collected monthly at 7 Boat Run sites. Additionally, DBRC will collect phytoplankton on the same day as the Boat Run collection at the Calhoun St. Bridge on the Delaware River and the Falls Bridge on the Schuylkill River. Phytoplankton will be identified and enumerated by the Academy of Natural Sciences. Phytoplankton data will be readily available on the DRBC website by December 31st, 2019.	Phytoplankton samples are being collected concurrently during Boat Run monitoring in 2019. Samples are being briefly analyzed by the Academy of Natural Sciences upon entering the lab. An additional, more detailed, analysis will be completed if additional external funding is acquired (grant submitted to NFWF). Phytoplankton identification and enumeration data will allow us accurately represent phytoplankton dynamics within the model. By understanding what species are present when and where, we will be better able to establish the linkage between nutrient loads and system phytoplankton response. Samples were collected at all 22 Boat Run stations across 7 events (April – October 2019) and delivered to the Academy of Natural Science. Live scans of community composition were performed on all samples. Based on

			the results from these live scans (expected shortly) and coincident chl-a results, DRBC will direct the Academy to perform more detailed community characterization.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: KL Lai	**Basin Commission Contact(s)**: J. Yagecic	**PRC**: 202B06
Project Description: Enhanced Bacterial Monitoring, Zones 3 and Upper 4			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Protection of human health associated with primary contact recreation		Monitoring of 8 shore-based sites (to be determined), 5x per month during the period from May through September 2019 for Fecal Coliform, E. Coli, and Enterococcus. Results will be compared to EPA's recommended criteria for contact recreation. All results will be readily available in STORET/WQX by December 31, 2019.	QAPP developed, submitted and approved by EPA. Sample collection has commenced. All sampling was completed in September 2019 and all analytical results were submitted to DRBC, reviewed, and approved. Results were presented to the Commissioners in December 2019. All results will be available in WQX by June 30, 2020.

Goal 2: Protecting America's Waters			
Objective 2: **Objective 2.2**: Protect and Restore Watersheds and Aquatic Ecosystems			
Work Plan Component/Program: IV. Assessment & Management **Work years**: 2019:	**EPA Contact(s)**: Kelly Somers	**Basin Commission Contact(s)**: J. Yagecic	**PRC**: 202B06
Project Description: Management - Grant and infrastructure management			

Environmental Outcomes	Measures	Outputs for FY 2019 (Commitments)	Status/Comment
Effective management of 106 Resources		• 106 grant application and reporting. Outputs include successful completion of: • Mid-year joint evaluation call; • Overall grant management; • End of year comments.	On track and proceeding to completion.